In the Claims

The following Listing of Claims replaces all prior versions in the application:

LISTING OF CLAIMS

1. (Currently amended) A method for detecting concealed items on or in an object, the method comprising:

producing a pencil beam of x-rays from an x-ray source directed toward said object;

scanning said beam of x-rays over the surface of said object; and

detecting x-rays scattered from said beam of x-rays as a result of interacting with said object and a low Z material panel, said object located between said detector and said panel, said detecting comprising differentiating x-rays back scattered by the object from those back scattered by the low Z material panel,

wherein said pencil beam of x-rays exposes said object to an x-ray dose in the range of about 1 microRem to about 10 microRem ~~is of sufficiently low energy to avoid detection if passing through the object after backscattering by the Z material panel~~.

2. (Original) The method of claim 1 further comprising generating a signal representative of the intensity of the x-rays scattered.

3. (Original) The method of claim 2 further comprising presenting said signal on a display.

4. (Original) The method of claim 1 wherein said low Z material panel is made polyethylene.

5. (Original) The method of claim 1 wherein said low Z material panel is made of epoxy.

6. (Original) The method of claim 1 wherein said low Z material panel is made of water.

7. (Original) The method of claim 1 further comprising a radiation shield coupled to said low Z material panel, said low Z material panel located between said object and said radiation shield.

8. (Original) The method of claim 7 wherein said radiation shield comprises an x-ray absorbing material.

9. (Original) The method of claim 8 wherein said x-ray absorbing material is steel.

10. (Original) The method of claim 8 wherein said x-ray absorbing material is lead.

11. (Original) The method of claim 7 wherein said radiation shield is about 1mm thick.

12. (Original) The method of claim 1 wherein said low Z material panel is located above said object.

13. (Original) The method of claim 1 wherein said low Z material panel is located below said object.

14. (Currently amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for detecting concealed items on or in an object, said method comprising:

producing a pencil beam of x-rays from an x-ray source directed toward said object;

scanning said beam of x-rays over the surface of said object; and

detecting x-rays scattered from said beam of x-rays as a result of interacting with said object and a low Z material panel, said object located between said detector and said panel, said detecting comprising differentiating x-rays back scattered by the object from those back scattered by the low Z material panel,

wherein said pencil beam of x-rays exposes said object to an x-ray dose in the range of about 1 microRem to about 10 microRem ~~is of sufficiently low energy to avoid detection if passing through the object after backscattering by the Z material panel~~.

15. (Currently amended) An apparatus to detect concealed items on or in an object, the apparatus comprising:

an x-ray source to produce a pencil beam of x-rays directed toward said object;

a scanner to scan said beam of x-rays over the surface of said object; and

a detector to detect x-rays scattered from said beam of x-rays as a result of interacting with said object and a low Z material panel, said object located between said detector and said panel, said detector differentiating x-rays back scattered by the object from those back scattered by the low Z material panel,

wherein said pencil beam of x-rays exposes said object to an x-ray dose in the range of about 1 microRem to about 10 microRem ~~is of sufficiently low energy to avoid detection if passing through the object after backscattering by the Z material panel~~.

16. (Original) The apparatus of claim 15 further comprising a processor to generate a signal representative of the intensity of the x-rays scattered.

17. (Original) The apparatus of claim 16 further comprising a display to display said signal.

18. (Original) The apparatus of claim 15 wherein said low Z material panel is made polyethylene.

19. (Original) The apparatus of claim 15 wherein said low Z material panel is made of epoxy.

20. (Original) The apparatus of claim 15 wherein said low Z material panel is made of water.

21. (Original) The apparatus of claim 15 further comprising a radiation shield coupled to said low Z material panel, said low Z material panel located between said object and said radiation shield.

22. (Original) The apparatus of claim 21 wherein said radiation shield comprises an x-ray absorbing material.

23. (Original) The apparatus of claim 22 wherein said x-ray absorbing material is steel.

24. (Original) The apparatus of claim 22 wherein said x-ray absorbing material is lead.

25. (Original) The apparatus of claim 21 wherein said radiation shield is about 1mm thick.

26. (Original) The apparatus of claim 15 wherein said low Z material panel is located above said object.

27. (Original) The apparatus of claim 15 wherein said low Z material panel is located below said object.

28. (New) The method of Claim 1, wherein said pencil beam of x-rays exposes said object to an x-ray dose in the range of about 1 microRem to about 5 microRem.

29. (New) The method of Claim 1, wherein said pencil beam of x-rays exposes said object to an x-ray dose of about 3 microRem.

30. (New) The method of Claim 1, further comprising using said detected x-rays to generate an image having a coefficient of variation (CV) in the range of about 2 to about 10 percent.

31. (New) The method of Claim 28, further comprising using said detected x-rays to generate an image having a coefficient of variation (CV) in the range of about 2 to about 10 percent.

32. (New) The method of Claim 1, wherein said pencil beam of x-rays is generated by an x-ray tube operating at about 50 KV and 5 mA.

33. (New) The device of Claim 14, wherein said pencil beam of x-rays exposes said object to an x-ray dose in the range of about 1 microRem to about 5 microRem.

34. (New) The device of Claim 14, wherein said pencil beam of x-rays exposes said object to an x-ray dose of about 3 microRem.

35. (New) The device of Claim 14, further comprising an imaging system adapted to use said detected x-rays to generate an image having a coefficient of variation (CV) in the range of about 2 to about 10 percent.

36. (New) The device of Claim 33, further comprising an imaging system adapted to use said detected x-rays to generate an image having a coefficient of variation (CV) in the range of about 2 to about 10 percent.

37. (New) The device of Claim 14, wherein said pencil beam of x-rays is generated by an x-ray tube operating at about 50 KV and 5 mA.

38. (New) The apparatus of Claim 15, wherein said pencil beam of x-rays exposes said object to an x-ray dose in the range of about 1 microRem to about 5 microRem.

39. (New) The apparatus of Claim 15, wherein said pencil beam of x-rays exposes said object to an x-ray dose of about 3 microRem.

40. (New) The apparatus of Claim 15, further comprising an imaging system adapted to use said detected x-rays to generate an image having a coefficient of variation (CV) in the range of about 2 to about 10 percent.

41. (New) The device of Claim 38, further comprising an imaging system adapted to use said detected x-rays to generate an image having a coefficient of variation (CV) in the range of about 2 to about 10 percent.

42. (New) The device of Claim 14, wherein said pencil beam of x-rays is generated by an x-ray tube operating at about 50 KV and 5 mA.